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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,490	10/08/2003	Pieter Vorenkamp	1875.3610001	5497

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1100 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER
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DEPPE, BETSY LEE

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/16/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/680,490

Applicant(s)

VORENKAMP ET AL.

Examiner

Betsy L. Deppe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 4/16/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because in Figure 1, one of the inputs to synchronization circuit 112 should be labeled as "clk" (see synchronization circuit 104). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

2. The claims are objected to because of the following informalities:
- a. on line 1 of claims 1-12 and 18-24, "data link" should be "data link system"; and

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b. in claims 26 and 27, it appears that "increasing" on line 2 should be "reducing" in order to be consistent with paragraph [36] (see also claim 9).

Appropriate correction is required.

### ***Double Patenting***

3. Applicant is advised that should claim 26 be found allowable, claim 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 10, and 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Salinger (US Patent No. 6,212,229 B1).

6. With regard to claims 1 and 2, Figure 3 of Salinger discloses the claimed invention including a transmission line (10), a transmitter de-emphasis circuit (38) and

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an equalizer wherein the transmitter de-emphasis circuit compensates for frequency distortion caused by the transmission line. (See abstract; column 1, line 64-column 2, line 18; column 6, lines 47-52) Although Salinger refers to 38 as a "pre-emphasis filter" instead of "de-emphasis filter" as recited, the element as described in Salinger is functionally equivalent to the "de-emphasis filter" as recited and referring to 38 as a "pre-emphasis filter" or "de-emphasis filter" is a naming convention that does not affect the functionality/purpose of the element. Furthermore, based on Figure 6, the applicant appears to "de-emphasis" and "pre-emphasis" interchangeable. Therefore, Figure 3 of Salinger anticipates the respective claims.

7. With regard to claims 3 and 4, Salinger discloses the claimed invention including a circuit with a gain that increases with frequency to offset signal loss of a transmission line. (See Figure 2)

8. With regard to claim 10, Salinger discloses the claimed invention including a twisted pair transmission line. (See "10" in Figure 3)

9. With regard to claims 22 and 23, Figure 3 of Salinger discloses the claimed invention including a transmission line (10), a transmitter circuit with equalization (38) and an equalizer wherein the transmitter circuit with equalization (38) compensates for frequency distortion caused by the transmission line. (See abstract; column 1, line 64-column 2, line 18; column 6, lines 47-52)

10. With regard to claim 24, Salinger discloses the claimed invention including a transmitter circuit with equalization (38) that includes a de-emphasis circuit that increases with frequency across a band of interest. (See Figure 2) Although Salinger refers to 38 as a "pre-emphasis filter" instead of "de-emphasis filter" as recited, the

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element as described in Salinger is functionally equivalent to the “de-emphasis filter” as recited and referring to 38 as a “pre-emphasis filter” or “de-emphasis filter” is merely a naming convention that does not affect the functionality/purpose of the element.

Furthermore, based on Figure 6, the applicant appears to “de-emphasis” and “pre-emphasis” interchangeable. Therefore, Salinger anticipates claim 24.

11. With regard to claims 25, Figure 3 of Salinger discloses the claimed invention including receiving a data signal at a first node (e.g. 36), equalizing the data signal (38), transmitting the data across a transmission line (10), receiving a data signal at a second node, and equalizing the data signal at the second node (88). (See abstract; column 1, line 64-column 2, line 18; column 6, lines 47-52)

12. With regard to claims 26 and 27, assuming the applicant changes “increasing” to “reducing” (see **Claim Objections** above), Figure 2 of Salinger discloses the claimed invention.

13. Claims 1-2, 9, 10, 13-16, 19, 20 and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fitzgerald et al. (US Patent No. 5,579,336).

14. With regard to claims 1, 2, 9, and 10, Fitzgerald et al. discloses the claimed invention including a transmission line (see 18a in Figure 1), a transmitter de-emphasis (e.g. 140 in one workstation) and an equalizer coupled to the output of the transmission line (e.g. 205 in another workstation). (See Figures 2 and 3; and column 4, line 49 - column 5, line 20)

15. With regard to claims 13, 14 and 25, Fitzgerald et al. discloses the claimed invention including receiving data signal at a first node; de-emphasizing, at the first

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node, low frequency components of the data signal relative to the high frequency signals (see column 4, line 66 - column 5, line 1); receiving the data signal at a second node (e.g. a transceiver on the other end of the transmission line) and de-emphasizing, at the first node, low frequency components of the data signal relative to the high frequency signals (see column 5, lines 1-7 and column 6, lines 39-47). Since the pre-emphasis circuit in the transmitter and the equalizing circuit in the receiver each performs half of the total equalization (see column 6, lines 39-47), it is implicit that the two circuits are functionally equivalent, i.e. the equalizing circuit in the receiver also emphasizes the high frequency components and attenuates the low frequency components (see column 4, line 66 - column 5, line 1) thereby acting as a high pass filter (as recited in claim 14).

16. With regard to claim 15, Fitzgerald et al. discloses the claimed invention including pre-distorting the signal to offset the low pass characteristic of a transmission line. (See column 5, lines 1-20) Furthermore, it is well-known in the art that transmission lines have low pass characteristics since signals are attenuated as the frequency increases. (For example, see Figure 2 of Salinger)

17. With regard to claim 16, Fitzgerald et al. discloses the claimed invention including compensating for the low pass characteristic of the transmission line in the step of de-emphasizing at the second node. (See column 5, lines 1-7 and column 6, lines 39-47) Furthermore, it is well-known in the art that transmission lines have low pass characteristics since signals are attenuated as the frequency increases. (For example, see Figure 2 of Salinger)

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18. With regard to claims 19 and 20, Fitzgerald et al. discloses the claimed invention including an equalizer that is a RC filter with a high pass response. (See 105 in Figure 3)

19. With regard to claims 26 and 27, assuming the applicant changes "increasing" to "reducing" (see ***Claim Objections*** above), Fitzgerald et al. discloses the claimed invention. (See column 4, line 66 - column 5, line 1)

### ***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 5-7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger or Fitzgerald et al. as applied to claim 1 above, and further in view of Gilbert (US Patent No. 6,525,601).

22. With regard to claim 5, Salinger or Fitzgerald et al. discloses the claimed invention except for an inductive peaking circuit at the output of the transmission line. Since Gilbert discloses that inductive peaking improves high frequency operation (see column 10, lines 24-25), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inductive peaking circuit at the output of the transmission line in Salinger or Fitzgerald et al. in order to improve the operation of the receiver.



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23. With regards to claims 6 and 7, Salinger or Fitzgerald et al. in view of Gilbert discloses the claimed invention except for details of the inductive peaking circuit as recited in the respective claims. At the time of the invention, it would have been obvious matter of design choice to one of ordinary skill in the art to use an inductive peaking circuit as recited since the applicant has not disclosed that the recited inductive peaking circuit provides an advantage, is used for a particular purpose or solves a stated problem. The specific structure or circuitry of the inductive peaking circuit is a matter of design choice based on considerations such as available components and desired size.

24. With regard to claims 11 and 12, Salinger or Fitzgerald et al. discloses the claimed invention including a differential transmission line. However, neither Salinger nor Fitzgerald et al. discloses using an inductor and resistor as recited in the respective claims. Since Gilbert discloses that inductive peaking improves high frequency operation (see column 10, lines 24-25), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inductive peaking circuit at the output of the transmission line in Salinger or Fitzgerald et al. in order to improve the operation of the receiver. Furthermore, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to use an inductive peaking circuit which an inductor and resistor as recited since the applicant has not disclosed that the recited inductive peaking circuit provides an advantage, is used for a particular purpose or solves a stated problem. The specific structure or circuitry of the inductive peaking circuit is a matter of design choice based on considerations such as available components and desired size.

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25. Claims 8 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger as applied to claims 1 and 25, respectively, above, and further in view of Fitzgerald et al.

26. With regard to claim 8, Salinger discloses the claimed invention except for a passive equalizer. Since Fitzgerald et al. teaches using passive equalizers in the receiver of a high speed data transmission system (see column 4, lines 54-65), it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to use a passive equalizer based on considerations such component availability. Furthermore, using a passive equalizer reduces power consumption of the circuit.

27. With regard to claim 28, Salinger discloses the claimed invention except for flattening the amplitude for the data signal for low and high frequency components **at the second node**. Fitzgerald et al. discloses performing half of the required equalization for compensating the transfer function of a coaxial cable at the transmitter and half at the receiver. (See column 5, lines 1-6 and column 6, line 41-49) Since Salinger teaches flattening the amplitude for the data signal for low and high frequency components **at the transmitter (i.e. the first node)**, it would have been obvious to one of ordinary skill in the art at the time the invention was made to also flatten the amplitude for the data signal for low and high frequency components **at the second node** so that each the transmitter and receiver each performs half of the equalization (as taught by Fitzgerald et al.) in order to reduce the level of radiated transmissions while improving the signal-to-noise ratio. (See Fitzgerald et al. column 6, lines 47-49)

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28. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger as applied to claim 1 above, and further in view of Gauthier et al. (US Pub. No. 2004/0120419). Salinger discloses the claimed invention except for the transmitter "de-emphasis" circuit reducing the amplitude of the low frequency components in the input signal.

Gauthier et al. teaches using a transmitter filter that reduces the amplitude of the low frequency components to compensate for frequency distortion. (See abstract and paragraphs [0025] - [0028]) It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pre-emphasis circuit of Salinger with the filter of Gauthier et al. in order increase the reliability of data correction while dissipating less power than conventional solutions to intersymbol interference problems. (See Gauthier et al., paragraphs [0011] and [0032])

29. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald et al. as applied to claim 13 and further in view of Grandia (US Patent No. 3,604,250) Fitzgerald et al. discloses the claimed invention except for shunting the low frequency components to ground.

Grandia discloses a high pass filter that passes high frequency signals and shunts low frequency components to ground. (See column 3, lines 33-35) Since the equalizing circuit in the receiver of Fitzgerald et al. acts as a high pass filter (as explained in the rejection of claims 13 and 14 above), it would have been obvious to one of ordinary skill in the art at the time the invention was made to shunt the low

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frequency components to ground as taught by Grandia in order to effectively attenuate/remove all of the low frequency components.

30. Claims 18 and 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger or Fitzgerald et al. as applied to claims 1 and 19 above, and further in view of Doyle et al. (US Patent No. 5,694,439). Salinger or Fitzgerald et al. discloses the claimed invention except for a constant impedance equalizer or a constant impedance input to the RC filter. Since Doyle discloses that the lack of constant impedance (i.e. impedance matching problems) results in filters with poor return loss characteristics (see column 2, lines 1-8), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a constant impedance equalizer or a constant impedance input to the RC filter in Salinger or Fitzgerald et al. in order to reduce signal reflections and improve signal quality.

### ***Conclusion***

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Betsy L. Deppe  
Primary Examiner  
Art Unit 2611